

CLAIMS

What is claimed is:

1. A method of processing transient errors produced in a color measurement system monitoring a color producing process, the method comprising:
- implementing a model of the color producing process;
 - monitoring an input to the color producing process;
 - 5 predicting an expected color signal based on the model and the monitored input;
 - measuring an output color produced by the color producing process to produce a measured color signal;
 - comparing the measured color signal to the expected color signal to
 - 10 produce a color error value, and;
 - selectively replacing the measured color signal based on the color error value.
2. The method of processing transient errors of claim 1 wherein selectively replacing the measured color signal comprises:
- replacing the measured color signal with a predicted color signal based on the expected color signal.
3. The method of processing transient errors of claim 1 further comprising:
- storing a measured color value representative of the measured color signal in association with the monitored input.
4. The method of processing transient errors of claim 1 wherein selectively replacing the measured color signal comprises:
- replacing the measured color signal with an historical color signal based on an historical value related to the monitored input.
5. The method of processing transient errors of claim 1 wherein implementing a model of the color production process comprises:

selecting at least one of a refined parameterized Neugebauer model, a multidimensional numerical model and an on-line statistical parameterized model
5 representative of the color producing process.

6. A method for calibrating a color reproduction device, the method comprising:

producing an image with the reproduction device in response to an input signal requesting the production of a target color;

5 measuring with a sensor, a color of the produced image, to generate a measured color signal value;

calculating an estimated color signal value based on the input signal;

validating the measured color signal value by comparing it to the estimated color signal value;

10 selecting a preferred color signal value from among at least the measured color signal value, and the estimated color signal value, based on the validity of the measured color signal value;

determining an error between the preferred color signal value and the target color; and,

15 selectively adjusting parameters of a control system of the color reproduction device to minimize the determined error for subsequently produced images.

7. The method for calibrating a color reproduction device of claim 6 wherein calculating an estimated color signal value comprises:

using one of a Neugebauer model, a multidimensional numerical model and a regression of historical performance data of the color reproduction device, in conjunction with an input valued based on the input signal to generate the
5 estimated color signal value.

8. The method for calibrating a color reproduction device of claim 6 wherein validating the measured color signal value comprises:

determining a ΔE value between the measured color signal value and the estimated color signal value;

- 5 comparing the magnitude of the determined deltaE value with a
predetermined threshold deltaE value; and,
 generating a validity assessment of the measured color signal value
based on the comparison.

9. The method for calibrating a color reproduction device of claim 6
wherein selectively adjusting parameters of a control system comprises:
 selectively adjusting at least one tone reproduction curve.

10. The method for calibrating a color reproduction device of claim 1
wherein selecting a preferred color signal value from among at least the measured
color signal value, and the estimated color signal value further comprises selecting a
preferred color signal from among the measured color signal value, the estimated
5 color signal value, and a value generated from historical system performance data.

11. A system including a color measurement sensor operative to monitor a
color produced in a color producing process, the system comprising:
 a color producing process;
 a model of the color producing process, the model and the process
5 operative to receive an input and respectively produce a model color signal and a
process output;
 a color sensor operative to produce a measured color signal
representative of the process output color;
 a preferred signal selector operative to select a preferred signal from
10 among at least the model color signal, and the measured color signal; and,
 a signal consumer operative to receive the preferred signal from the
preferred signal selector.

12. The system of claim 11 wherein the signal consumer comprises:
 a system controller operative to up date system control parameters
based on the received preferred signal.

13. The system of claim 11 wherein the color producing process comprises:

a color printing process.

14. The system of claim 11 wherein the color producing process comprises:

a plant hydration process.

15. The system of claim 11 wherein the color producing process comprises:

a textile dying process.

16. The system of claim 11 wherein the color producing process comprises:

a food processing process.

17. The system of claim 13 further comprising:

a rendering device comprising at least one of a xerographic printer, an ionographic printer and an inkjet printer.

18. The system of claim 11 wherein the model of the color producing process comprises:

at least one of a refined parameterized Neugebauer model, a multidimensional numerical model and an on-line statistical parameterized model.

19. The system of claim 11 wherein the preferred signal selector is operative to select a preferred signal based on a difference between the measured color signal and a reference signal.